ClearBridge
A Franklin Templeton Company

Listed Infrastructure Powers AI — And Vice Versa

Key Takeaways

- The potential of AI and data growth to drive significant infrastructure investment represents an emerging long-term thematic driver for the listed infrastructure asset class.
- In addition to expected benefits from increased power demand, AI may also reduce costs for utilities, potentially improving efficiency by optimising operations of the grid and reducing energy waste.
- Beyond utilities, we find that AI and data demand may impact almost every major infrastructure subsector, while the role of AI in powering decarbonisation is also underappreciated.

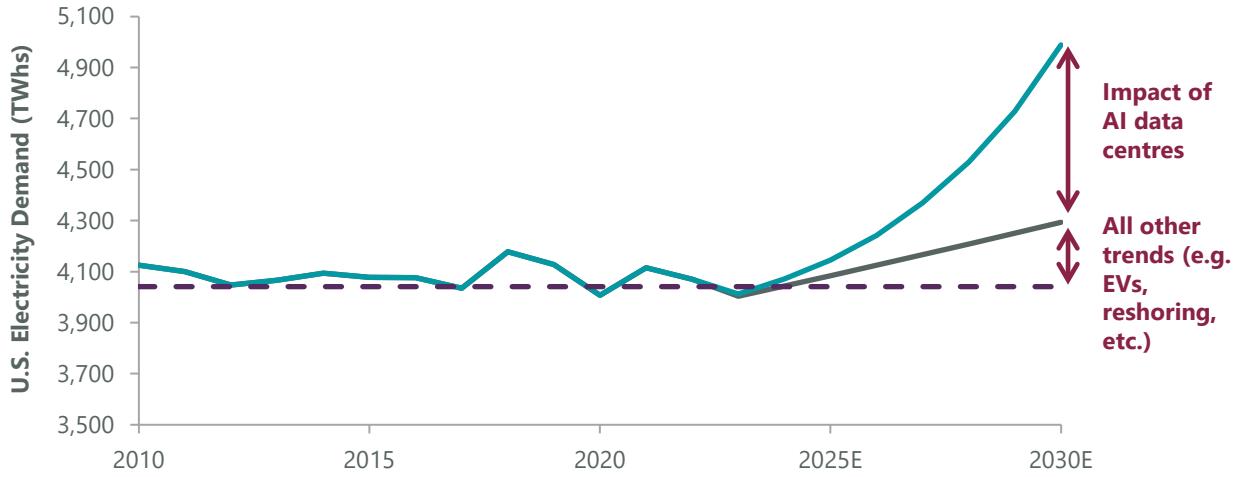
Listed infrastructure has a number of major long-term thematic drivers: decarbonisation, significant electricity network investments to replace aging infrastructure and improve resiliency and its role as a unique inflation hedge. Meanwhile, the valuation divide between listed and unlisted infrastructure showcases the attractiveness of the former.

Add to these another emerging theme: the potential of artificial intelligence (AI) and data growth to drive significant infrastructure investment. AI and data growth leads to increased power demand and a greater focus on smart grids (Exhibit 1). We also believe AI's usage within infrastructure will have several benefits, streamlining processes, enhancing reliability and boosting efficiency within the sector. AI and data growth may also increase the role of infrastructure such as regulated utilities in decarbonisation.

Utilities are stepping up to meet the challenge of AI's growing power demand and starting to receive recognition for their efforts. Over the next five years, consumers and businesses are expected to generate twice as much data than over the past 10 years, with major tech companies expected to invest $1 trillion in data centres. Globally, power demand is expected to increase at a compound annual growth rate of 14% over the next three years.[1]

1 Source: Internal Research, McKinsey, IEA.

Exhibit 1: AI Joins EVs as Driver of Power Demand



Source: Wells Fargo Securities, LLC estimates, 21 March 2024 – "AI Power Surge – Quantifying Upside for Renewables & Natural Gas Demand." Reprinted by permission. Copyright © 2024 Wells Fargo Securities ("Wells Fargo"). The use of the above in no way implies that Wells Fargo or any of its affiliates endorses the views or interpretation or the use of such information or acts as any endorsement of the use of such information. The information is provided "as is" and none of Wells Fargo or any of its affiliates warrants the accuracy or completeness of the information.

Global investment in data centres is expected to grow at 5% compounded annually, rising to $41 billion by 2026. AI data centre racks could require 7x more power than traditional data centre racks, leading to a high case of power demand growth of almost 20% annually by 2026.[2]

An increased power load growth profile across the entire network will lower residential customer bills as total network costs (a large portion of which is fixed cost) are socialised across a larger megawatt-hour usage base. Also, in terms of generation, transmission and distribution, increased capital spending is likely to lead to accelerating asset base growth, revenues and earnings.

AI Improves Infrastructure Processes

Utilities should also benefit from AI in a variety of ways. For one, AI should reduce costs for utilities, potentially improving efficiency by optimising operations of the grid and reducing energy waste. AI can also be used to predict and prevent outages, improve grid security and manage demand response programs, increasing overall grid reliability and facilitating the growth of smart grids. There is also the possibility that AI will improve customer service. As large language models improve, AI should provide the ability to automate tasks such as answering questions and resolving complaints, freeing up customer service representatives for more complex issues.

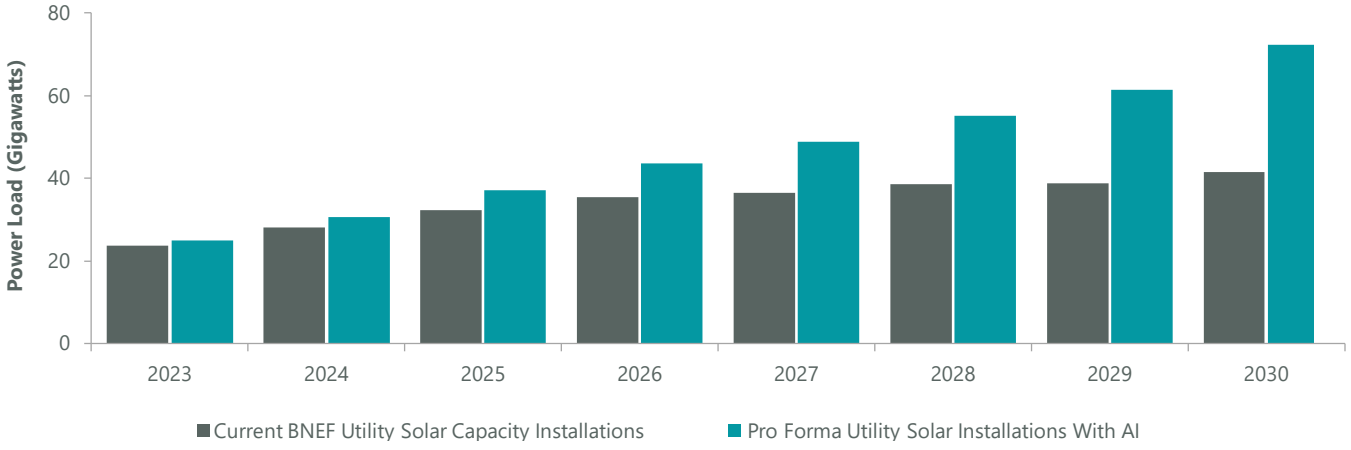
AI and Data Demand Supports Major Infrastructure Subsectors

Beyond utilities, we find that AI and data demand is likely to impact almost every major infrastructure subsector:

- **Toll roads** will use smart traffic management to allow for optimised traffic flow and benefit from predictive maintenance. Longer term, the integration of autonomous vehicles on toll roads can increase efficiency, safety and reliability, creating new revenue opportunities and lowering operational costs.
- **Freight rail** will benefit from load planning optimisation, which has historically been a manual process, and improved arrival time estimation to optimise dwell times — how long cargo is expected to wait at a given point in its journey.
- **Water utilities** can use AI to improve leak detection, water quality monitoring and drought prediction.
- **Midstream energy** may see similar benefits from real-time monitoring, which can help midstream and energy infrastructure assets detect leaks and optimise hydrocarbon system flows.
- **Communication towers** will likely see increased data demand, which leads to greater tenanting on their towers, higher organic leasing and amendment revenues. They may even be able to site cloud on-ramps on tower sites, offering customers lower latency in their cloud connectivity.

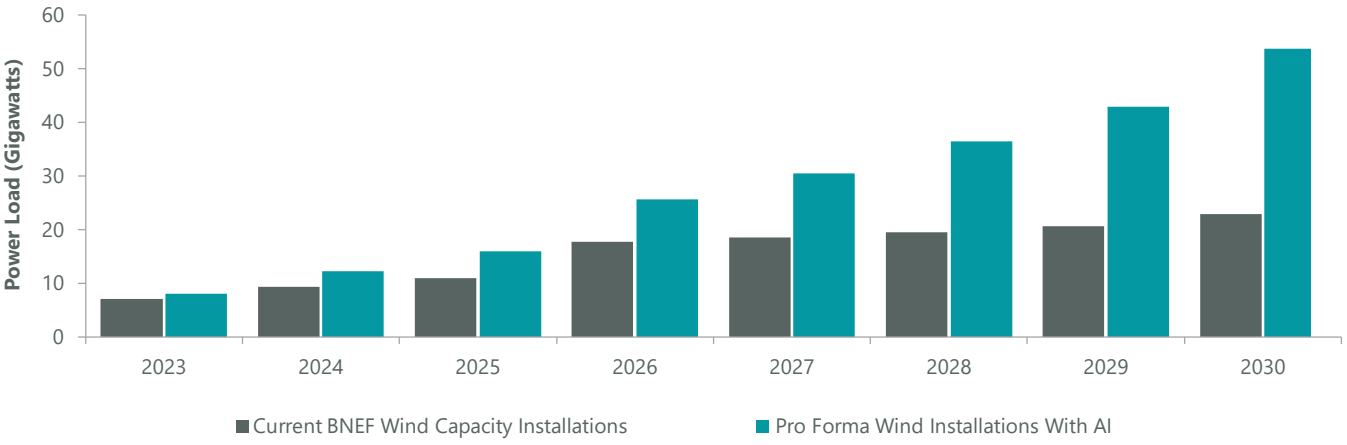
1 Source: 2 Ibid.

Exhibit 2: U.S. Solar Installations Propelled by AI



Source: Internal Research, WFG, EIA, BNEF.

Exhibit 3: U.S. Wind Installations Propelled by AI



Source: Internal Research, WFG, EIA, BNEF.

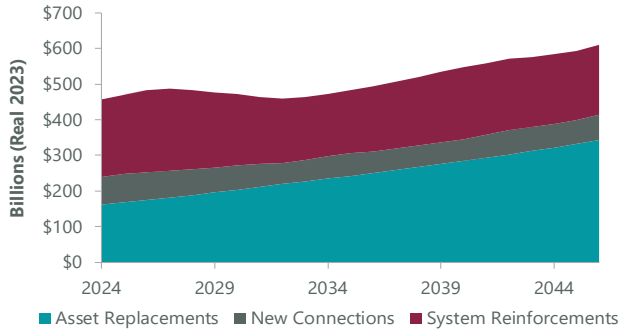
AI and Decarbonisation

We believe the role of AI in powering decarbonisation is also underappreciated. Utilities will need to add generation capacity to meet the increased power load from AI. Most of this will likely come from renewable sources. According to estimates, AI's demand for power could propel investment in solar capacity at a compound annual growth rate of from 8% to 16% through 2030 (Exhibit 2) and investment in wind capacity from 18% to 31% over the same time frame (Exhibit 3).

Regulated utilities will benefit from such a structural AI tailwind as it intersects with that of the broader energy transition, where we believe they will stand out from other parts of the electricity value chain. While funding for the energy transition, likely exacerbating the cost-of-living crisis, threatens to reduce returns for subsidy-reliant parts of the electricity value chain, our contention is that regulators will continue to provide attractive returns for regulated utilities.

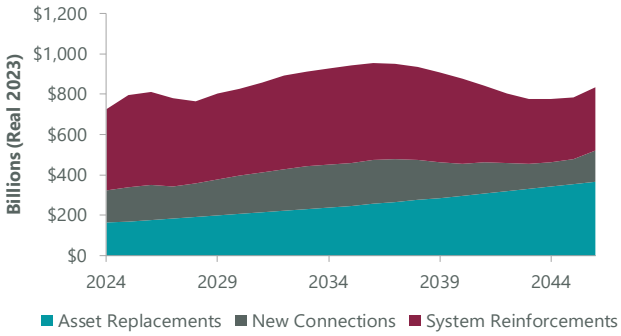
This is in part due to the large grid investment currently needed. Under the International Energy Agency's status quo scenario, over $600 billion of annual investment will be undertaken by 2050 (Exhibit 4). Annual investment in power networks peaks at over $950 billion under a net-zero outcome scenario, however (Exhibit 5), requiring $21 trillion of total spend versus $13.5 trillion of total spend in the status quo. Maintenance investments, such as reinforcement and replacement, account for about 80% of all spend. For utilities, such investments should translate into attractive returns off their regulated assets.

Exhibit 4: Investment in Power Grid in Energy Transition Scenario (ETS)



Source: BNEF, 2024. In the energy transition scenario, policymakers pursue an energy transition relying only on historical efficiency trends and economically competitive, commercially at-scale clean energy technologies; the increase in global temperatures above pre-industrial levels reaches 2.6C by 2100.

Exhibit 5: Investment in Power Grid in Net-Zero Scenario (NZS)



Source: BNEF, 2024. The net-zero scenario reveals the sheer scale and scope of the challenge of remaining within 1.75C of global warming and achieving the goals of the Paris Agreement.

Case Study: Dominion Energy

Dominion Energy is a regulated electric utility in Virginia with a $41 billion infrastructure asset base serving 2.8 million customers in the region.

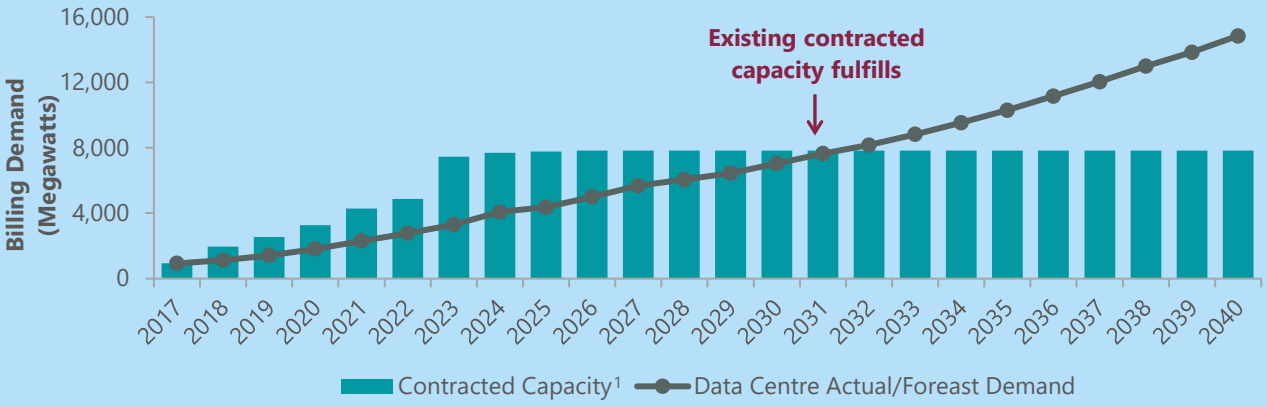
- **Market Opportunity:** With 3.5 GW of data centre capacity, Northern Virginia is bigger than the next five U.S. markets combined, and the next four world markets combined.
- **Competitive Advantages:** Dominion enjoys its fibre backbone, affordable energy, attractive business climate, proximity to economic centres, limited natural disaster risk and a tech workforce in its region among its competitive advantages.
- **Growth Driver:** Over the next 15 years, data centre demand is forecast to quadruple in Dominion's service territory (to nearly 15 GW), with rack power density moving from between 6 kW and 12 kW (using Intel CPUs) to between 26 kW and 80 kW (using Nvidia H100) to support AI in its training phase. Existing contracted capacity fulfills projected demand growth through 2031 (Exhibit 6).

What Does This Mean for Dominion?

Increased data centre load will result in elevated sales growth, with summer peak load demand set to grow 5.5% per year over the next decade. Grid Investment, including transmission investment of $2.5 billion per year in Virginia, will drive ~9% annual rate base growth over the next five years.

Current estimates are that 2033 data centre load will represent ~50% of Dominion's Virginia sales versus ~25% today.

Exhibit 6: Dominion Set to Grow with Data Centre Demand



[1] Reflects Electric Service Agreements and Construction Letters of Authorisation.
Source: Dominion Energy Virginia, 2024. Shown for illustrative purposes only.

Case Study: American Tower

American Tower is a leading independent owner, operator and developer of wireless and broadcast communications infrastructure.

- **Market Opportunity:** American Tower has 41,000 sites in the U.S. and a further 139,000 sites across 19 countries, predominantly emerging markets (75,000 in India, 40,000 in Latin America and 18,000 in Africa).
- **Competitive Advantages:** The company's business model is to lease space on its towers to predominantly wireless carriers on a long-term basis, generally ranging 5–10 years in duration, with built-in price escalators. This approach is likely to result in a stable and predictable cash flow business with high incremental margins.
- **Growth Driver:** Demand for higher speeds and ever-growing volumes of wireless traffic create a favourable fundamental backdrop that should continue to benefit American Tower. U.S. mobile data traffic is expected to grow at 20% annually through at least 2028, with carrier capex remaining steady at $30 billion per year to keep pace with data demand. For context, driven by 4G technology, average monthly usage per smartphone grew 15x between 2014 and 2023. 5G applications are still under development, but apps integrating AI will likely be data hungry.

What Does This Mean for American Tower?

American Tower benefits as carriers upgrade their networks, leading to greater organic leasing. Leasing would accelerate in two ways:

1. Upgrading technology attracts amendment revenues
2. Data growth would increase network capacity needs, attracting additional tenants to existing sites.

Data growth could also increase opportunities to site cloud on-ramps on tower sites.

Conclusion

AI adds another captivating chapter to the growth story for listed infrastructure. AI complements infrastructure's role as an inflation hedge while providing investors stable cash flows and dividends derived from regulation and long-term contracts. Its low correlation with most other major asset classes also makes it a viable portfolio diversifier. AI tailwinds boosting most of infrastructure's subsectors offer one more compelling reason for investors building diversified portfolios to consider global listed infrastructure.

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